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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/555,617

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Wen Gao

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EXAMINER

FOTAKIS, ARISTOCRATIS

ART UNIT

PAPER NUMBER

2611

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/555,617	Applicant(s) GAO ET AL.	
	Examiner ARISTOCRATIS FOTAKIS	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/29/2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 5 and 9 - 11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 5 and 9 - 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 – 5, 10 – 11 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Mantravadi et al (US 2005/0068918).

Re claims 1 and 19, Mantravadi teaches of a method for use in a receiver (Fig.8B), the method comprising: receiving a hierarchical modulation based received signal ({y1} or {y2}), the hierarchical modulation based signal comprising at least a first signal layer (base stream, Fig.8B) and a second signal layer (enhancement stream, Paragraphs 0005 - 0006); and simultaneously recovering from the received hierarchical modulation based received signal data conveyed in the first signal layer and data conveyed in the second signal layer (simultaneous decoding by decoders 846a and 846b as shown in Fig.8B, Paragraphs 0250 – 0251), wherein the simultaneously recovering step includes the steps of: decoding the hierarchical modulation based signal

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to recover data conveyed in the first signal layer (#846a, Fig.8B); generating soft metrics (LLR) from the hierarchical modulation based signal as a function of a combined signal space (*enhancement stream includes the base stream*) of the hierarchical modulation based signal (842b); and decoding the hierarchical modulation based signal to recover data conveyed in the second signal layer as a function of the generated soft metrics (846b, Fig.8B).

Re claim 2, Mantravadi teaches of wherein the first signal layer is an upper signal layer and the second signal layer is a lower signal layer (Paragraphs 0005 - 0006).

Re claim 3, Mantravadi teaches of wherein the soft metrics are log-likelihood ratios (LLR, Paragraph 0251).

Re claim 4, Mantravadi teaches of wherein the combined signal space is a combination of a signal space of the first signal layer and a signal space of the second signal layer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mantravadi in view of Hewitt et al (US 2002/0026615).

Re claim 5, Mandravati teaches all the limitations of claim 3 except of wherein the generating step includes the step of using the hierarchical modulation based signal as an index into a look-up table of soft metrics.

Hewitt teaches of optimum decoding by computing LLR. The LLR is then stored in a ROM or other storage medium, and the LLR is calculated using a table lookup from the storage medium (Paragraph 0005).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have stored the calculated LLR values in a look up table in order to avoid recalculations and for achieving faster decoding.

Claims 9 - 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mantravadi in view of Hewitt et al (US 2002/0026615).

Re claim 9, Mantravadi teaches of a receiver comprising: a demodulator for demodulating a received signal to provide a hierarchical modulation based signal (#360b, Fig.8B, Paragraphs 0005 - 0006) comprising at least two signal layers (*base and enhancement streams*); a first decoder operative on the hierarchical modulation based signal for decoding one of the at least two signal layers to provide data therefrom (#846a, Fig.8B); and a second decoder for providing data from the other of the at least

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two signal layers (#846b, Fig.8B); wherein the second decoder operates independently of the first decoder (#846a and 846b are independent, Fig.8B). Mandravati teaches of the soft metrics (LLR) are determined as a function of a combined signal space of the at least two signal layers (842a, 842b, Fig.8B) and provides the soft metrics to the second decoder for use (846b) therein for providing the data from the other of the at least two signal layers (enhancement stream, Fig.8B). However, Mandravadi does not specifically teach of further including a look-up table for storing therein soft metrics and wherein the look-up table provides the soft metrics to the second decoder for use therein for providing the data from the other of the at least two signal layers.

Hewitt teaches of optimum decoding by computing LLR. The LLR is then stored in a ROM or other storage medium, and the LLR is calculated using a table lookup from the storage medium (Paragraph 0005).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have stored the calculated LLR values in a look up table in order to avoid recalculations and for achieving faster decoding.

Re claim 10, Mantravadi teaches of wherein the at least two signal layers include an upper signal layer and a lower signal layer (Paragraphs 0005 - 0006).

Re claim 11, Mantravadi teaches of wherein the soft metrics are log-likelihood ratios (LLR, Paragraph 0251).

Response to Arguments

Applicant's arguments filed October 29, 2010 have been fully considered but they are not persuasive.

Applicants submit that Mantravadi separately processes each layer with separate LLR elements 842a and 842b. Mantravadi computes the LLRs based on the symbols actually used for that layer - not a combined signal space as required by Applicants' claim 1.

Examiner submits that the enhancement layer is a combined signal space that necessarily includes the base layer. More specifically the enhancement layer is the combination of two QPSK modulation schemes, where QPSK is the base layer, and would result to a 16QAM modulation, where the 16QAM is the enhancement layer (Paragraphs 0005 - 0006). This is also shown in Applicants prior art (Figs 4 and 5) where the lower layer (LL) or enhancement layer is a combined signal space that includes the upper layer or base layer.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARISTOCRATIS FOTAKIS whose telephone number is (571)270-1206. The examiner can normally be reached on Monday - Friday 6:30 - 4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Aristocratis Fotakis/

Examiner, Art Unit 2611

/CHIEH M FAN/

Supervisory Patent Examiner, Art Unit 2611